

REMARKS

Amendments to the claims

Claim 1 has been amended to recite a surface "having a position-encoded portion and an obscured portion, wherein the position-encoded portion bears accessible encoded position data and the obscured portion does not bear accessible position data".

Claim 1 has also been amended to recite "measuring a time-varying vector representing the relative movement of the device over the position-encoded portion and the obscured portion of said surface during motion of the device" and "measuring at least one absolute position of the device with respect to the position-encoded portion of said surface during a portion of said motion when said position-encoded portion of said surface is accessible".

Claim 2 has been amended to recite "moving the measurement device over the position-encoded surface, and whenever the measurement device passes over said one or more position encoding indicia, at any point of said motion detecting one or more position encoding indicia and, thereby calculating at least one absolute position measurement of the device"

The language of claim 5 has been amended consistently with the language of claim 1.

Claim 9 has been made dependent on claim 5 for clarity. Further, the language of claim 9 has been amended consistently with the language of claim 1.

Claim 12 has been amended to recite "A measurement device for determining the time-varying absolute position of the device with respect to a surface having a position-encoded portion with accessible encoded position data and an obscured portion where encoded position data is not accessible, said device including:

a first measuring device arranged to determine at least one absolute position of the device with respect to the position-encoded portion of said surface;

a second measuring device arranged to determine a time-varying vector representing the relative movement of the device with respect to the surface, wherein the first measuring device is

further arranged to determine said at least one absolute position of the device at any time while said second measuring device is determining said time-varying vector".

Claim 13 has been amended to recite that *"the first measuring device is provided for determining said at least one absolute position of the device whenever the first measuring device passes by said one or more position encoding indicia during the relative movement of the measurement device"*.

The language of claim 15 was corrected.

These amendments are supported by the application as filed, for example Fig. 3 and the corresponding portions of the specification.

Objections to the claims

Claim 12 stands objected to for reciting *"time-varying with"*. The Applicant submits that the language of claim 12 has been clarified to recite *"time-varying vector representing the relative movement of the device with"*, and respectfully requests the Examiner to withdraw this objection of claim 12.

Rejection under 35 U.S.C. 102

Claims 1, 3, 4, 12, 15, 17, 18 and 20 stand rejected under 35 U.S.C. 102(e) as being anticipated by Published U.S. Patent Application No. 20010055063 to Nagai. The Applicant respectfully disagrees.

Claim 1

In the Official Action, the Examiner opines that Nagai discloses a method for determining the time-varying absolute position of a device with respect to a surface

comprising:

measuring at least one absolute position of the device with respect to the surface (sections 0054, 0055, 0067, 0070, 0079, 0084, 0086); and

measuring a time-varying vector representing the relative movement of the device with respect to the surface; and initializing the position of the vector to the at least one absolute position measurement thereby measuring the absolute position of the vector and thus the time-varying absolute position of the device (sections 0068, 0070-0075 and 0086-0094).

Applicant respectfully disagrees. Nagai discloses, when the current image a robot has of its environment does not allow determining the current absolute position of the robot, calculating the current absolute position of the robot using the movement of the robot from its previous position, which had a known absolute value. The Applicant respectfully submits that a motion from a position of known absolute value is by definition a non-relative motion, since it has a known origin, and can thus not be deemed to disclose or suggest a "relative movement" as recited in claim 1

However, in order to move the application to issue, Applicant has amended claim 1 to recite:

"A method of determining the time-varying absolute position of a device with respect to a surface having a position-encoded portion and an obscured portion, wherein the position-encoded portion bears accessible encoded position data and the obscured portion does not bear accessible position data, the method comprising the steps of:

moving the device with respect to the surface;

measuring a time-varying vector representing the relative movement of the device over the position-encoded portion and the obscured portion of said surface during motion of the device;

measuring at least one absolute position of the device with respect to the position-encoded portion of said surface during a portion of said motion when said position-encoded portion of said surface is accessible; and

initializing the position of the vector to the at least one absolute position measurement thereby measuring the absolute position of the vector and thus the time-varying absolute position

of the device”.

Applicant notes that Nagai teaches (paragraph [0072]) determining the absolute position of a robot using stereo distance images in which “characteristic points” of immobile objects (a, b) of known absolute position are detected. When the robot moves, successive absolute positions are calculated from successive distance images. Applicant notes that when a current (t+1) distance image comprises only objects (a, b) of unknown absolute position, Nagai teaches calculating the displacement of the robot, starting from a previous (t) distance image where the absolute position coordinates of the robot were known, and adding this displacement to the previous absolute position coordinates of the robot to calculate the current absolute position coordinates of the robot.

Applicant has shown above that the displacement calculated by Nagai is not a relative movement. However, Applicant submits that even if one were to consider that Nagai discloses “measuring a time-varying vector representing the relative movement of the device” with respect to a surface and “measuring at least one absolute position of the device” with respect to the surface, the “measuring of at least one absolute position” of Nagai would always be done prior to the “measuring a time-varying vector representing the relative movement of the device”, and not the “*during a portion of said motion when said position-encoded portion of said surface is accessible*”.

In particular, it is not seen where Nagai has “a surface having a position-encoded portion” wherein “the position-encoded portion bears accessible encoded position data” and where Nagai would show “*measuring at least one absolute position of the device with respect to the position-encoded portion of said surface during a portion of said motion when said position-encoded portion of said surface is accessible*”.

At least in view of the above, the Applicant submits that claim 1 is patentable over Nagai.

Claim 12

The above arguments can be used to show that Nagai, which only shows measuring an absolute position at the beginning of a movement having an unknown

endpoint, also fails to disclose or suggest a measurement device as recited in claim 12, and in particular *"wherein the first measuring device is further arranged to determine said at least one absolute position of the device at any time while said second measuring device is determining said time-varying vector"*. Accordingly, the Applicant submits that claim 12 is patentable over Nagai.

Claims 3, 4, 15, 17, 18 and 20

Claims 3, 4 and 20 depend on claim 1 and claims 15, 17 and 18 depend on claim 12. The Applicant submits that at least in view of their dependency on claim 1 or 12, claims 3, 4, 17, 18 and 20 are patentable over Nagai.

Rejection under 35 U.S.C. 103

Claims 2 and 13, as well as 5-9, 16, 19 and 23, stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of U.S. Pat. No. 6,792,165 to Silverbrook; claims 10 and 11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of U.S. Pat. No. 6,741,335 to Kinrot. The Applicant respectfully disagrees.

Claim 2

In the Action, the Examiner asserts that Nagai teaches "measuring the relative movement of the device with respect to the surface and thereby calculating a time-varying motion vector representing the movement of the device with respect to the surface". The Applicant respectfully disagrees, at least in view of the fact that Nagai exclusively calculates non-relative movements, which start from points of known position.

However, and in order to move the application to issue, claim 2 has been amended to recite: *"moving the measurement device over the position-encoded surface, and whenever the measurement device passes over said one or more position encoding indicia, at any point of said motion, detecting one or more position encoding indicia, thereby calculating at least*

one absolute position measurement of the device”.

The Applicant submits that, as shown above, Nagai only teaches using the absolute position of the starting point of a movement to calculate the end point of a movement, and does nowhere disclose or suggest measuring an absolute position during the movement, and in particular “whenever the measurement device passes over said one or more position encoding indicia”.

The Applicant further submits that the Examiner has failed to show how Silverbrook would have motivated one of ordinary skill in the art to modify the teachings of Nagai to obtain a method as recited in claim 2 as amended, and in particular comprising *“moving the measurement device over the position-encoded surface, and whenever the measurement device passes over said one or more position encoding indicia, at any point of said motion, detecting one or more position encoding indicia, thereby calculating at least one absolute position measurement of the device”*. Accordingly, the Applicant submits that the Examiner has failed to show that a combination of Nagai and Silverbrook would have led one skilled in the art to a process as recited in claim 2, and submits that claim 2 is patentable over Nagai in view of Silverbrook.

Furthermore, the Applicant notes that the motivation which the Examiner sets forth combining Nagai and Silverbrook does not, with all due respect, make sense. The Examiner asserts that a person skilled in the art would be motivated to modify Nagai “to provide a system that most closely emulates the use of pen/pencil and paper”. Nagai relates to a robot that is able to walk on legs (see paragraph [0004]) using image data. Why would a person skilled in the art want to improve a walking robot to emulate the use of a pen/pencil and paper? Accordingly, the Applicant respectfully submit that not even has the Examiner failed to show that combining Nagai and Silverbrook would have led one of ordinary skill in the art to the method of claim 2, but also that the Examiner has failed to show that one of ordinary skill in the art would have been motivated to combine these references in the first place.

At least in view of the above, the Applicant respectfully submits that claim 2 is patentable over Nagai in view of Silverbrook.

Claim 13

The above arguments show that the proposed combination of Nagai and Silverbrook is untenable.

Additionally, the above arguments can be used to show that the Examiner has failed to show that a combination of Nagai and Silverbrook (assuming that they are combinable in some rationale manner, which is denied) would have led one skilled in the art to a measurement device as recited in claim 13, and in particular comprising "*a second measuring device arranged to measure the relative movement of the device with respect to the surface and output a time-varying motion vector representing the movement of the device with respect to the surface wherein the first measuring device is provided for determining said at least one absolute position of the device whenever the first measuring device passes by said one or more position encoding indicia during the relative movement of the measurement device; and processing means adapted to calculate the absolute location of the stroke with respect to the surface on the basis of the at least one measurement of the absolute position in combination with the measurement of the time-varying motion vector*". Accordingly, the Applicant submits that claim 13 is patentable over Nagai in view of Silverbrook.

Claims 5-9, 16, 19 and 23.

Claims 5-9 and 23 depend on claim 1 and claims 16 and 19 depend on claim 12.

The suggested combination of Nagai and Silverbrook is untenable for the reasons given above. Moreover, the Applicant submits that at least in view of their dependency on claims 1 and 12, claims 5-9 and 23 and 16, 19 are patentable over Nagai in view of Silverbrook.

Claim 10

Claim 10 depends on claim 1. The Applicant will now show that claim 1 is non-obvious over Nagai in view of Kinrot. The Examiner asserts that one of ordinary skill in the art would have been motivated to include the teachings of Kinrot measurement device in the invention of Nagai in order to use a different but more accurate

mechanism to measure a time-varying vector representing the movement of the device in respect to the surface. The Applicant respectfully traverses this assertion, and notes in particular that the Examiner opines that the system of Kinrot for determining a relative movement is more accurate than the system of Nagai, which uses a rather developed stereo vision system for determining the position and movement of the robot in its environment. The Applicant respectfully submits that the Examiner seems to rely on the Examiner's own knowledge, and accordingly respectfully requests the Examiner to provide an affidavit or declaration setting forth specific factual statements and explanation to support that the system of Kinrot is more accurate than the system of Nagai for determining a relative movement. See 37 CFR 1.104(d)(2).

Further, the Applicant submits that the Examiner has failed to show that Kinrot discloses or suggests a method comprising "*measuring at least one absolute position of the device with respect to the position-encoded portion of said surface during a portion of said motion when said position-encoded portion of said surface is accessible*", as recited in amended claim 1. Accordingly, and in view of the above discussion of claim 1 over Nagai, the Applicant submits that the Examiner has failed to show how any combination of Nagai and Kinrot could have led one of ordinary skill in the art to a method as recited in claim 1, and in particular comprising: "*measuring at least one absolute position of the device with respect to the position-encoded portion of said surface during a portion of said motion when said position-encoded portion of said surface is accessible*". The Applicant therefore respectfully submits that claim 1 is patentable over Nagai in view of Kinrot.

The Applicant further submits that at least in view of its dependency, claim 10 is patentable over Nagai in view of Kinrot.

Claim 11

Claim 11 depends on claim 1. The Applicant respectfully submits that at least in view of its dependency, claim 11 is patentable over Nagai in view of Kinrot.

Allowable subject matter

Applicants acknowledge with gratitude the Examiner's indication of allowability as to claims 14, 21, 22 and 24. Claim 14 depends on claim 12, and claims 21, 22 and 24

depend on claim 1. However, the Applicant submits that, as shown above, claims 1 and 12 are patentable over the cited Art.

In view of the above, the Applicant submits that the application is now in condition for allowance and respectfully urges the Examiner to pass this case to issue.

The Commissioner is authorized to charge any additional fees that may be required or credit overpayment to deposit account no. 08-2025. In particular, if this response is not timely filed, the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 08-2025.

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